

41. *Oporornis formosa*.—Add to breeding area, "from Southern and Eastern Ohio."

Since then Prof. Jones has found the White-throated Sparrow (*Zonotrichia albicollis*) breeding in Ohio, in two successive seasons, which should also be added to the check list.

NINETEEN YEARS OF BIRD MIGRATION AT OBERLIN, OHIO.

BY LYNDS JONES.

Migration studies have been carried on at Oberlin for upwards of twenty-five years, but there seem to be good reasons for limiting this record to the years since 1895. The data have not been presented before in this complete form because, in the opinion of the writer, the records were not sufficiently numerous to furnish a reliable table for the use of those who may wish to continue these studies.

For the first six years the territory covered lay almost wholly within Lorain county, extending from about five miles south of Oberlin to the shore of Lake Erie, and east and west from Oberlin about five miles, comprising a territory seventeen miles north and south by ten miles east and west. In this area, all of which was originally virgin forest, there are two river valleys extending in a northerly direction, extensive open fields, remnants of the original forest, brushy tangles where the dumps of abandoned sandstone quarries have been overgrown, and the lake shore with its considerable marshy areas at the mouths of streams. There are no elevations of importance. The two river valleys now have slender remnants of once considerable growth of white pine and red cedar, with islands of hemlock.

Since 1900 operations have been extended to include the Cedar Point sand pit with the adjacent extensive marshes and lake shore, and the narrow area bordering the road between Berlin Heights and the lake shore at Ceylon Junction, and also the mouth of Old Woman's Creek, the lower reaches of which are extensively marshy. Perhaps it would have been

better to separate the records from this distinctively different region from those of the definitely Oberlin region, but that could not be done without danger of serious mistakes. The Cedar Point sand pit records are mainly those of water birds, at least as they affect the appended tables. Some land birds tarry there later in the spring than they have been found in the Oberlin region.

I have no hesitation in saying that the percentage of error in these records must be small, because observations have been carried on almost every day during the season of migration, and for weeks before any migration began and for three weeks after it closed, and by a considerable body of trained observers. Questionable records have been eliminated.

Since the Crow, Robin, Bluebird, Meadowlark, Northern Flicker, Bronzed Grackle, and Mourning Dove regularly remain all winter in small numbers, the exact arrival of the first migrating individuals may not have been determined with certainty in every instance, but the migration of these species has been considered as begun with the advent of a considerable number of individuals who were singing and evidently individuals which had not remained in the region all winter.

The writer is well aware of the fact that averages based upon few records are of questionable value. Nearly all of the species which have been recorded as migrants are here given for the sake of completeness, with no thought that averages based on as few as nine records can be taken as true averages.

The median rather than the average date of arrival has been used in these tables, because the median has proved the more reliable in practice. Extremes in either earliest arrivals or latest records of species which pass north to breed do not affect the median as they do the average.

The species are arranged according to their average date of arrival as a matter of convenience for further studies of the migrations rather than according to the systematic arrangement of the A. O. U. Check-List. If this arrangement

be objected to on the ground that it is inconvenient to find any species because it is out of alignment with the Check-List, one would answer that the purpose of this paper is not to show the systematic relationships, but rather groupings according to times of migration. Even if it were possible, in any list arranged according to taxonomic relationships, to show those relationships accurately, which is avowedly impossible, the inconvenience of such a list when used in almost any sort of field work is considerable, so considerable that some other arrangement must often be devised. The only general utility arrangement is the alphabetical one.

Where the records are less than twelve in number it is likely that additional records covering a number of years will change the date here given as the median. In such cases, then, this paper claims only to give a basis upon which further work may be done. It is entirely possible that any of the dates given here as first seen may be moved forward by later records. They are of value only in showing what the range of variation may be, and also in showing that the birds are held back by a backward spring, and encouraged to move northward early in an early spring.

It will be noted that there is very marked disagreement in the dates of "Last seen." The irregularity is rather more marked among the water birds than among the land birds. The very late date of the Mallard in 1904 possibly indicates that the pair seen was breeding, although no nest was found. Color is lent to this supposition by the finding of a female Mallard in the marshes of Bay Point on the last day of June, 1914. The case of the Olive-backed Thrush (June 13, 1905) cannot be explained in this way. The single individual seen did not seem to be abnormal. There is a strong suspicion that the single Semipalmated Plover recorded on June 17, 1904, was a wounded bird. It flew without difficulty when approached too closely, but permitted an approach within five feet. The other June records are not particularly notable, since my records show a considerable number of early June "lists" for transient species.

The average variation between first arrivals (earliest and latest) for all of the species here listed is 21 days. The average variation of first arrivals of the water birds is 33 days, and of the land birds 20 days. The variation in the land birds which remain to breed is 20 days, of the transient species is 19 days. The land bird with the least variation is the Black-throated Green Warbler with 8 days, and the greatest variation is the Pipit, with a variation of 66 days. It is likely that the regular route of migration of the Pipit does not cross this region, since only occasional scattered flocks are found. The March 15, 1901, record is my own. There were two birds, one of which was secured for positive identification.

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Crow	19	Feb. 28;	Feb. 11, '98; Breeds		
Robin	19	Feb. 28;	Feb. 14, '14; Breeds		
Killdeer	19	Mar. 1;	Feb. 18, '12; Breeds		
Bluebird	19	Mar. 1;	Feb. 16, '11; Breeds		
Canada Goose	14	Mar. 6;	Feb. 19, '13	Apr. 1; Apr. 15, '07	
Meadowlark	18	Mar. 6;	Feb. 22, '13; Breeds		
Bronzed Grackle	19	Mar. 6;	Feb. 15, '12; Breeds		
Song Sparrow	19	Mar. 6;	Feb. 26, '06; Breeds		
Northern Flicker	17	Mar. 7;	Feb. 26, '06; Breeds		
Red-winged Blackbird	19	Mar. 8;	Feb. 26, '13; Breeds		
Black Duck	11	Mar. 14;	Feb. 22, '06	Apr. 4; Apr. 15, '99	
Baldpate	9	Mar. 14;	Mar. 9, '08	May 10; May 27, '07	
Redhead	8	Mar. 15;	Mar. 9, '08	Apr. 21, '03	
Mourning Dove	14	Mar. 15;	Mar. 11, '07; Breeds		
Migrant Shrike	19	Mar. 15;	Mar. 2, '01; Breeds		
Canvas-back	7	Mar. 17;	Mar. 13, '03	Apr. 1; Apr. 10, '05	
Cowbird	19	Mar. 17;	Mar. 9, '10; Breeds		
Rusty Blackbird	19	Mar. 17;	Mar. 5, '10	May 8; May 16, '08	
Towhee	19	Mar. 17;	Mar. 6, '99; Breeds		
Pintail	10	Mar. 18;	Feb. 22, '09	Apr. 20; Apr. 29, '07	
Whistling Swan	5	Mar. 18;	Mar. 14, '04	Apr. 3, '99	
Greater Scaup Duck	11	Mar. 19;	Mar. 2, '04	Apr. 19	
Field Sparrow	19	Mar. 19;	Mar. 12, '98; Breeds		
Mallard	12	Mar. 20;	Mar. 5, '06	Apr. 10; Jun. 17, '04	
Fox Sparrow	19	Mar. 20;	Mar. 5, '10	Apr. 21; May 2, '07	
Red-breasted Merganser	11	Mar. 21;	Mar. 15, '09	Apr. 30; May 22, '09	
Belted Kingfisher	19	Mar. 22;	Mar. 11, '10; Breeds		
Phoebe	19	Mar. 22;	Mar. 5, '05; Breeds		
Merganser	5	Mar. 23;	Feb. 22, '06	May 10, '12	
Turkey Vulture	18	Mar. 24;	Mar. 11, '08; Breeds		
Vesper Sparrow	19	Mar. 25;	Mar. 16, '03; Breeds		
Wilson's Snipe	19	Mar. 27;	Mar. 15, '03	May 3; May 22, '09	
Chipping Sparrow	19	Mar. 30;	Mar. 21, '10; Breeds		
Shoveller	8	Mar. 31;	Mar. 18, '07	Apr. 21, '14	
Lesser Scaup Duck	16	Mar. 31;	Mar. 9, '08; Breeds		

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Coot	14	Mar. 31;	Mar. 9, '08	May 5;	May 22, '09
Woodcock	18	Mar. 31;	Mar. 10, '02; Breeds		
Swamp Sparrow	18	Mar. 31;	Mar. '13, '08; Breeds		
Hermit Thrush	19	Apr. 2;	Mar. 21, '03	May 8;	May 26, '10
Pied-billed Grebe	18	Apr. 3;	Mar. 16, '07	May 6;	May 28, '04
Hooded Merganser	7	Apr. 3;	Mar. 11, '11	Apr. 20;	Apr. 30, '11
Great Blue Heron.....	18	Apr. 5;	Mar. 20, '97; Breeds		
Brown Thrasher.....	19	Apr. 5;	Mar. 22, '02; Breeds		
Pectoral Sandpiper	13	Apr. 6;	Mar. 30, '10	May 2;	May 11, '07
Yellow-bellied Sapsucker.	19	Apr. 6;	Mar. 23, '10	May 9;	May 30, '11
Bufflehead	14	Apr. 8;	Mar. 15, '09	Apr. 26;	May 13, '07
Purple Martin	19	Apr. 9;	Mar. 25, '10; Breeds		
Bittern	12	Apr. 10;	Mar. 25, '10; Breeds		
Barn Swallow	19	Apr. 11;	Mar. 30, '07; Breeds		
Blue-winged Teal.....	12	Apr. 12;	Mar. 22, '13; Breeds		
Ruby-crowned Kinglet...	19	Apr. 12;	Mar. 25, '05	May 12;	May 24, '10
Tree Swallow	18	Apr. 12;	Mar. 31, '10; Breeds		
Upland Plover	19	Apr. 13;	Mar. 22, '04; Breeds		
Bonaparte's Gull	14	Apr. 14;	Mar. 31, '13	May 20;	May 22, '11
Ruddy Duck	11	Apr. 14;	Mar. 26, '07	May 10;	May 13, '02
Horned Grebe	13	Apr. 16;	Mar. 24, '14	Apr. 29;	May 17, '08
Osprey	11	Apr. 16;	Apr. 5, '08; Breeds		
White-throated Sparrow.	19	Apr. 16;	Mar. 21, '03	May 18;	May 22, '09
Louisiana Water-Thrush.	19	Apr. 16;	Mar. 28, '04; Breeds		
Loon	10	Apr. 17;	Mar. 19, '07	May 8;	May 21, '01
Spotted Sandpiper	18	Apr. 18;	Apr. 9, '04; Breeds		
Savanna Sparrow	13	Apr. 18;	Mar. 30, '12	May 12;	May 25, '06
Wood Duck	6	Apr. 19;	Mar. 23, '04; Breeds		
Chimney Swift	19	Apr. 19;	Apr. 10, '07; Breeds		
Greater Yellow-legs	13	Apr. 20;	Apr. 12, '10	May 12	
Myrtle Warbler	19	Apr. 20;	Mar. 26, '08	May 19;	May 27, '07
Blue-gray Gnatcatcher...	19	Apr. 20;	Mar. 29, '07; Breeds		
Bank Swallow	18	Apr. 22;	Apr. 6, '02; Breeds		
Green Heron	17	Apr. 23;	Apr. 6, '13; Breeds		
Yellow Warbler	19	Apr. 24;	Apr. 11, '08; Breeds		
Grasshopper Sparrow....	19	Apr. 25;	Apr. 10, '10; Breeds		
House Wren	19	Apr. 25;	Apr. 17, '96; Breeds		
Rough-winged Swallow..	17	Apr. 26;	Apr. 16, '02; Breeds		
Solitary Sandpiper	18	Apr. 27;	Apr. 18, '09	May 17;	May 25, '03
Bobolink	19	Apr. 27;	Apr. 16, '04; Breeds		
Warbling Vireo	19	Apr. 27;	Apr. 17, '96; Breeds		
Oven-bird	19	Apr. 27;	Apr. 22, '99; Breeds		
Catbird	19	Apr. 27;	Apr. 19, '13; Breeds		
Long-billed Marsh Wren.	17	Apr. 27;	Apr. 16, '06; Breeds		
Olive-backed Thrush	19	Apr. 27;	Apr. 13, '08	May 25;	Jun. 13, '05
Cliff Swallow.....	19	Apr. 27;	Apr. 6, '03; Breeds		
Wood Thrush	19	Apr. 27;	Apr. 10, '04; Breeds		
Red-headed Woodpecker.	19	Apr. 28;	Apr. 13, '10; Breeds		
Kingbird	19	Apr. 28;	Apr. 19, '14; Breeds		
Baltimore Oriole	19	Apr. 28;	Apr. 14, '05; Breeds		
Lark Sparrow	10	Apr. 28;			
Blue-headed Vireo.....	17	Apr. 28;	Apr. 17, '02	May 16;	May 22, '07
Black and White Warbler	19	Apr. 28;	Apr. 19, '14; Breeds		

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Blue-winged Warbler....	19	Apr. 28;	Apr. 19, '14; Breeds		
Henslow's Sparrow	5	Apr. 29;	Apr. 22, '07; Breeds		
Black-thr. Green Warbler	19	Apr. 29;	Apr. 25, '96	May 22; May 28, '07	
Palm Warbler	16	Apr. 29;	Apr. 20, '08	May 16; May 22, '09	
Yellow-legs	12	Apr. 30;	Apr. 1, '12	May 13; May 19, '03	
Red-eyed Vireo	19	Apr. 30;	Apr. 27, '06; Breeds		
Maryland Yellow-throat..	19	Apr. 30;	Apr. 19, '14; Breeds		
Sora	17	May 1;	Apr. 11, '08; Breeds		
Crested Flycatcher	19	May 1;	Apr. 24, '13; Breeds		
Scarlet Tanager	19	May 1;	Apr. 24, '13; Breeds		
Nashville Warbler	19	May 1;	Apr. 27, '14	May 21; May 27, '01	
Water-Thrush	16	May 1;	Apr. 24, '13	May 20; May 25, '03	
Redstart	19	May 1;	Apr. 25, '12; Breeds		
Veery	18	May 1;	Apr. 20, '99; Breeds		
Virginia Rail	19	May 2;	Apr. 14, '13; Breeds		
White-crowned Sparrow..	19	May 2;	Apr. 21, '11	May 19; May 22, '09	
Rose-breasted Grosbeak..	18	May 2;	Apr. 27, '96; Breeds		
Yellow-throated Vireo...	19	May 2;	Apr. 20, '14; Breeds		
Orange-crowned Warbler	13	May 2;	Apr. 26, '09	May 14; May 22, '09	
Least Flycatcher	19	May 3;	Apr. 11, '03	May 24; Jun. 3, '10	
Florida Gallinule	9	May 4;	Apr. 20, '07; Breeds		
Orchard Oriole	18	May 4;	Apr. 29, '99; Breeds		
Cerulean Warbler	19	May 4;	Apr. 29, '99; Breeds		
Black-thr. Blue Warbler..	19	May 4;	Apr. 27, '96	May 22; May 29, '01	
Chestnut-sided Warbler..	17	May 4;	Apr. 30, '06	May 23; May 27, '07	
Whip-poor-will	16	May 5;	Apr. 19, '14; Breeds		
Indigo Bunting	19	May 5;	Apr. 26, '02; Breeds		
Northern Parula Warbler	13	May 5;	May 1, '00; Breeds		
Magnolia Warbler	18	May 5;	Apr. 28, '96	May 22; May 28, '08	
Short-billed Marsh Wren	7	May 5;	Apr. 30, '06; Breeds		
Pipit	17	May 6;	Mar. 15, '01	May 16; May 26, '99	
Pine Warbler	6	May 6;	Apr. 29, '98	May 13; May 15, '14	
Blackburnian Warbler...	18	May 6;	Apr. 27, '05	May 22; May 29, '09	
Kirtland's Warbler	3	May 6;	May 2, '06		
Common Tern	14	May 7;	Apr. 29, '07; Breeds near		
Least Bittern	9	May 7;	Apr. 25, '04; Breeds		
King Rail	9	May 7;	May 4, '08; Breeds		
Wood Pewee	19	May 7;	May 2, '99; Breeds		
Yellow-breasted Chat....	19	May 7;	May 1, '03; Breeds		
Gray-cheeked Thrush....	14	May 7;	Apr. 29, '99	May 22; May 29, '09	
Philadelphia Vireo	8	May 8;	Apr. 29, '07	May 20; May 27, '07	
Golden-winged Warbler...	8	May 8;	May 4, '02	May 14; May 23, '05	
Prothonotary Warbler...	5	May 8;	Apr. 27, '13; Breeds		
Acadian Flycatcher	18	May 9;	May 3, '13; Breeds		
Dickcissel	7	May 9;	May 6, '96; Breeds		
Lincoln's Sparrow	12	May 9;	Apr. 14, '12	May 14; May 23, '04	
Hooded Warbler	12	May 9;	Apr. 22, '14; Breeds		
Yellow-billed Cuckoo....	17	May 10;	May 6, '99; Breeds		
Kentucky Warbler	8	May 10;	Apr. 27, '04		
Tennessee Warbler	17	May 10;	May 1, '13	May 22; May 30, '13	
Bay-breasted Warbler....	18	May 10;	May 4, '02	May 21; May 28, '07	
Canada Warbler	18	May 10;	Apr. 28, '96	May 22; Jun. 3, '10	
Cape May Warbler.....	12	May 10;	Apr. 27, '14	May 16; May 27, '07	

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Connecticut Warbler	9	May 10;	May 3, '14	May 25;	May 29, '12
Black Tern	12	May 11;	May 2, '07; Breeds		
Black-billed Cuckoo	18	May 11;	May 4, '14; Breeds		
Ruby-thr. Hummingbird.	19	May 11;	May 2, '06; Breeds		
Prairie Warbler	9	May 11;	Apr. 29, '99	May 17;	May 20, '07
Mourning Warbler	15	May 11;	May 3, '14	May 25;	Jun. 2, '13
Least Sandpiper	10	May 12;	May 4, '14	May 16;	May 22, '10
Nighthawk	17	May 12;	Apr. 21, '09; Breeds		
Black-poll Warbler	18	May 12;	May 4, '06	May 24;	Jun. 3, '04
Semipalmated Plover.	5	May 13;	May 11, '12	May 25;	Jun. 17, '04
Yellow-bellied Flycatcher	4	May 13;	May 9, '04	May 26;	Jun. 1, '14
Wilson's Warbler	14	May 13;	May 5, '00	May 25;	Jun. 3, '10
Red-backed Sandpiper.	4	May 14;		May 17;	May 20, '10
Alder Flycatcher	19	May 14;	May 7, '02; Breeds		
Olive-sided Flycatcher.	5	May 14;	Apr. 29, '13	May 27;	Jun. 1, '14
Ruddy Turnstone	10	May 18;	Mar. 31, '12	May 28;	Jun. 1, '14
Semipalmated Sandpiper.	5	May 20;	May 16, '03	May 23;	Jun. 1, '14

THE FOLLOWING SPECIES ARE WINTER RESIDENTS :

Brown Creeper	17	Apr. 28;	May 24, '10
Tree Sparrow	19	Apr. 29;	May 9, '09
Golden-crowned Kinglet.	16	Apr. 30;	May 11, '09
Slate-colored Junco	18	May 1;	May 20, '07
Purple Finch	16	May 2;	May 28, '07
Winter Wren	18	May 8;	May 17, '98
Red-breasted Nuthatch.	12	May 13;	May 28, '07
Pine Siskin	7	May 13;	May 20, '07
Horned Lark		Apr. 1,	'99
Northern Shrike		Apr. 3,	'99
Snowflake		Mar. 16,	'08

The following species have been recorded, but the records are either too few or too irregular to be of any value for reference. They need particular attention. The species are arranged alphabetically.

Chickadee, Carolina	Goose, White-fronted
Cormorant, Double-crested	Goshawk
Crossbill, White-winged	Grosbeak, Evening
Curlew, Hudsonian	Grosbeak, Pine
Dowitcher	Hawk, Duck
Duck, Ring-necked	Hawk, Rough-legged
Eagle, Golden	Knot
Gadwall	Lark, Hoyt's Horned
Golden-eye	Longspur, Lapland
Golden-eye, Barrow's	Mockingbird
Goose, Blue	Murre, Brunnich's
Goose, Snow	Owl, Saw-whet

Owl, Short-eared	Sparrow, Nelson's
Owl, Snowy	Teal, Green-winged
Phalarope, Wilson's	Tern, Caspian
Plover, Black-bellied	Vireo, White-eyed
Plover, Golden	Warbler, Worm-eating
Plover, Piping	Waxwing, Bohemian
Sandpiper, Baird's	Willet, Western
Sandpiper's, Stilt	Wren, Bewick's
Sparrow, Bachman's	

The Red-Crossbill is too irregular to be placed in any group. It is sometimes found every month in the year, but often absent.

The Herring and Ring-billed Gulls are present all the year, but do not breed in the vicinity, of course. The departure in spring of the birds which breed during the season cannot, therefore, be ascertained with any degree of accuracy.

The following species are regular residents: Alphabetically arranged.

Bob-white	Jay, Blue
Cardinal	Lark, Prairie Horned
Chickadee	Nuthatch, White-breasted
Eagle, Bald	Owl, Barn
Goldfinch	Owl, Barred
Grouse, Ruffed (scarce)	Owl, Great Horned
Hawk, Cooper's	Owl, Long-eared
Hawk, Marsh	Owl, Screech
Hawk, Pigeon	Titmouse, Tufted
Hawk, Red-shouldered	Waxwing, Cedar
Hawk, Red-tailed	Woodpecker, Downy
Hawk, Sharp-shinned	Woodpecker, Hairy
Hawk, Sparrow	Woodpecker, Red-bellied
Hawk, Broad-winged	Wren, Carolina